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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/043,171	03/12/1998	STEPHEN MCLAUGHLIN	36-1136	6305

7590 09/16/2002

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EXAMINER

AZAD, ABUL K

ART UNIT	PAPER NUMBER
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2654

DATE MAILED: 09/16/2002

17

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/043,171

Applicant(s)

MCLAUGHLIN ET AL.

Examiner

ABUL K. AZAD

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 June 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 and 16-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 16-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- ☐ Interview Summary (PTO-413) Paper No(s) _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. This action is in response to the communication filed on June 14, 2002.
2. Claims 1-11 and 16-18 are pending in this action. Claim 18 has been newly added. Claim 15, has been canceled.
3. The applicant's arguments with respect to claims 1-11 and 16-18 have been fully considered but they are not deemed to be persuasive. For examiner's response to the applicant arguments or comments, see the detailed discussion in the Response to the Arguments section.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

5. Claims 1-11 and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by Otsuka et al. (US 5,745,651).

As per claim 1, Otsuka teaches, "a method of generating a cyclic sound waveform corresponding to a sequence of substantially similar cycles," comprising the steps of:

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“(a) generating a cyclical sound waveform sample” (Abstract, col. 4, line 46 to col. 5, line 4);

“(b) generating a successive cyclical sound waveform sample from said cyclical sound waveform sample and data defining the transformation followed by said cycles in the temporal vicinity of said cyclical sound waveform sample” (col. 2, lines 13-54, Fourier transform is performed on the resultant, transformed sample value to provide a pitch waveform);

“(c) designating said successive cyclical sound waveform sample as a cyclical sound waveform sample and repeating (b)” (col. 2, lines 13-54, reads “since a parameter that is acquired at specific sampling frequency is employed to generate pitch waveform for arbitrary sampling frequencies and to link them together, synthesized speech for an arbitrary sampling frequency can be generated by simple method”);

“(d) repeating (c) a plurality of times to generate a sequence of said successive cyclical sound waveform samples corresponding to a plurality of said cycles” (col. 2, lines 13-54);

“(e) outputting the samples of said sequence to generate a waveform” (col. 2, lines 59-64, a speech waveform can be generated by using a parameter in a frequency range).

As per claim 2, Otsuka teaches, “said waveform comprises voiced speech” (Abstract).

As per claim 3, Otsuka teaches, “in which said data defining said transformation does so by reference to a predetermined reference waveform sequence” (col. 2, lines

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35-54, Fourier transform is performed on the resultant, transformed sample value to provide a pitch waveform)

As per claim 4, Otsuka teaches, "in which said reference waveform sequence comprises a stored speech waveform" (col. 4, lines 37-67)

As per claim 5, Otsuka teaches, "in which said steps (a) and (b) comprise generating a plurality of values representing said waveform sample values as a point in a multidimensional space in which corresponding portions of successive said cycles are substantially superposed" (col. 8, lines 46 to col. 9, line 39).

As per claim 6, Otsuka teaches, "in which said data defining said transformation does so by reference to a predetermined reference waveform sequence and transformation approximates . . . successive to the first, on said reference waveform sequence to a corresponding second point on the waveform to be synthesized" (col. 7, line 19 to col. 8, line 65).

As per claim 7, Otsuka teaches, "in which a given successive waveform sample is derived in accordance with data from a point on said reference waveform sequence at a position within a said cycle which corresponds to that of said given successive waveform sample, and at least one other point on said reference waveform sequence offset in time therefrom" (col. 7, line 19 to col. 8, line 65).

As per claim 8, Otsuka teaches, "in which said step (b) comprises calculating said transformation from a set of stored waveform values" (col. 4, lines 37-67).

As per claim 9 and 11, Otsuka teaches, "in which the initial performance of said step (a) to initial synthesis of said waveform comprises a step of section of an initial

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value which differs from a previous initial value selected on a previous synthesis of said waveform." (col. 8, lines 26-45).

As per claim 10, Otsuka teaches, "in which said step comprises applying a pseudo random number generation algorithm to select said value" (col. 7, lines 45-54).

As per claim 18, it is interpreted and thus rejected for the same reasons set forth in the rejection of claim 1.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Otsuka et al. (US 5,745,651) in view of Kleijn et al. (Speech Coding and Synthesis).

As per claim 16, Otsuka teaches, "a method of generating a synthetic voiced waveform," said method comprising:

"storing data defining n-dimensional state space representations of voiced speech signals, in which successive voiced speech pitch pulse cycles are superimposed to provide a model of voiced speech dynamics" (col. 4, line 24 to col. 5, line 4);

"selecting a synthesized waveform starting point in said n-dimensional state space representation for a predetermined voiced speech waveform that is offset from said stored data by an offset vector" (col. 7, line 35 to col. 8, line 58);

"selecting successive further synthesized waveform points in said n-dimensional state space representation for said predetermined voiced speech waveform that are also respectively offset from said stored data in dependence jointly upon the preceding point in the synthesized sequence nearest other stored points in state sequence space and an offset vector therefrom" (col. 7, line 35 to col. 8, line 58);

"repeating (b) and (c) for plural voiced speech cycles and outputting the resulting sequence of thus synthesized waveform points to generate a voiced speech waveform" (col. 7, line 35 to col. 8, line 58).

Otsuka does not teach that n being an integer having a value at least three. However, Kleijn teaches the above limitation (Pages 584-586). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide Otsuka with $N=3$ as taught by Kleijn because Kleijn teaches that an $N=3$ deterministic system can reproduce a naturally sounding voiced speech waveform.

As per claim 17, it is interpreted and thus rejected for the same reasons set forth in the rejection of claim 16.

Response to Arguments

8. The applicant argues: "None of the passages cited by the Examiner (Abstract, column 2, lines 13-54 and 59-64) teach the generation of any waveform samples required by claim 1".

In response to applicant's argument the examiner notes that Otsuka teaches generation of waveform samples in several places of his patent. For example, at col. 2, lines 15-34, which read, "generating pitch waveforms by employing a pitch and a parameter of synthesized speech and for a connecting the pitch waveforms to provide a speech waveform . . . a parameter is calculated for each pitch in the process for generating a pitch waveform"; from this it is clear that waveform sample could be a parameter of each pitch or a pitch waveform for speech waveform. More clearly stated in Patent 651 at col. 4, lines 46-49, read "parameter generator".

As per claims 3 and 6, the applicant argues: "it does not make any mention of any data that defines a transformation followed by cycles in the temporal vicinity of cyclical sound waveform sample and as such cannot teach that feature of the claim".

The examiner notes that this feature teaches at col. 2, lines 13-54, Fourier transform is performed on the resultant, transformed sample value to provide a pitch waveform.

As per claim 5, the applicant argues: "a multidimensional state space representation of a signal in which successive pitch pulse cycle are superposed to estimate the progression of the signal within each cycle and from cycle to cycle. . . does not teach the features of claim 5".

The examiner consider more than one state space is a multidimensional state space, here Osuka teach two-dimensional state space. The examiner notes that above features teaches at col. 8, line 45 to col. 9, line 39.

As per claim 10, the applicant argues: "it does not make any mention of a pseudo random number generation algorithm as is required by claim 10".

As applicant mention that to set an internal register of a wavepoint number memory to 0, to initialize a parameter series counter to 0 and to fetch parameters for i^{th} and $(i+1)$ frames. So the wavepoint number is random number, which is generated.

As per claim 16 and 17, the applicant argues: "Nowhere in this page does it mention n-dimensional state space representation of voiced speech referred to in the claim".

In response the examiner notes that n-dimension here as 2-dimension state space. Waveform point number n_w as a 2-dimension state space.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Abul K. Azad** whose telephone number is **(703) 305-3838**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Marsha D. Banks-Harold**, can be reached at **(703) 305-4379**.

Any response to this action should be mailed to:

Commissioner for Patents

Washington, D.C. 20231

Or faxed to:

(703) 872-9314

(For informal or draft communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application should be directed to the Technology Center's Customer Service Office whose telephone number is **(703) 306-0377**.

Abul K. Azad

September 9, 2002

Marsha D Banks-Harold
MARSHA D. BANKS-HAROLD
SUPERVISORY PATENT EXAMINER
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